

This listing of claims will replace all prior versions and listings of the claims in the application.

In the Claims:

1. (Currently amended) ~~A method for generating a directional sound environment, the method comprising:~~
~~providing a headgear unit having a plurality of microphones thereon;~~
The method of Claim 41 wherein the headgear unit includes a plurality of
microphones thereon, the method including:
detecting a sound signal from the plurality of microphones; and
applying a transfer function to the sound signal to provide a transformed sound signal, the transformed sound signal providing an approximation of free field hearing sound at a subject's ear inside the headgear unit.
2. (Original) The method of Claim 1, wherein the transfer function is based on an experimentally determined propagation effect from sound propagating to an opening of an ear canal and substantially omitting propagation interference from the headgear unit.
3. (Original) The method of Claim 1, further comprising generating sound inside the headgear unit responsive to the transformed sound signal.
4. (Original) The method of Claim 1, wherein the headgear unit comprises a protective helmet.
5. (Original) The method of Claim 1, wherein the plurality of microphones are positioned at locations on the headgear unit, the locations being selected to provide sufficient sound information to provide an approximation of free field hearing sound.

6. (Original) The method of Claim 1, wherein applying a transfer function further comprises reducing the amplitude of a portion of the sound signal if the amplitude is higher than a threshold level.

7. (Original) The method of Claim 1, wherein applying a transfer function further comprises canceling the amplitude of portions of sound signals.

8. (Cancelled).

9. (Original) The method of Claim 1, wherein the headgear unit is substantially sound-proof in a frequency range.

10. (Cancelled).

11. (Currently amended) A device for generating a directional sound environment, the device comprising:

a headgear unit;

a pinna on an outer surface of the headgear unit;

~~one or more microphones, wherein at least one of the microphones is a~~
microphone positioned adjacent the pinna; and

a speaker positioned in an interior of the headgear unit, wherein the microphone is configured to receive a sound signal and the speaker is configured to generate sound inside the headgear unit.

12. (Original) The device of Claim 11, wherein the device further comprises a processor configured to apply a transfer function to the received sound signal to provide a transformed sound signal, the transformed sound signal providing an approximation of free field hearing sound at a subject's ear inside the headgear unit.

13. (Original) The device of Claim 12, wherein the transfer function is based on an experimentally determined propagation effect from sound propagating to an opening of an ear canal and substantially omitting propagation interference from the headgear unit.

14. (Currently amended) The device of Claim 12, ~~wherein the~~ including a plurality of microphones ~~are~~ positioned at locations on the headgear unit, the locations being selected to provide sufficient sound information to provide an approximation of free field hearing sound.

15. (Original) The device of Claim 12, wherein the processor is further configured to reduce an amplitude of a portion of the sound signal if the amplitude is higher than a threshold level.

16. (Original) The device of Claim 12, wherein the processor is further configured to cancel the amplitude of a portion of the sound signal.

17. (Original) The device of Claim 12, wherein the headgear unit comprises a helmet.

18. (Original) The device of Claim 11, wherein the headgear unit is substantially sound-proof in a frequency range.

19-22. (Cancelled).

23. (Currently amended) The device of Claim ~~19~~ 11, wherein the processor is further configured to cancel the amplitude of selected sound signals.

24-36. (Cancelled).

37. (New) The device of Claim 11, wherein the pinna approximates the shape of a human ear.

38. (New) The device of Claim 37, including an earphone including an in-ear portion, wherein the speaker is configured to generate sound through the in-ear portion.

39. (New) The device of Claim 37, wherein the pinna approximates the shape of an average human ear.

40. (New) The device of Claim 37, wherein the pinna approximates the shape of an ear of an individual intended to wear the headgear unit.

41. (New) The device of Claim 40, including an earphone including an in-ear portion, wherein the speaker is configured to generate sound through the in-ear portion.

42. (New) The device of Claim 11, including an earphone including an in-ear portion, wherein the speaker is configured to generate sound through the in-ear portion.

43. (New) A method for generating a directional sound environment, the method comprising:

providing a device including:

a headgear unit;

a pinna on an outer surface of the headgear unit;

a microphone positioned adjacent the pinna; and

a speaker positioned on an interior of the headgear unit;

detecting a sound signal from the microphone; and

generating sound inside the headgear unit from the speaker.

44. (New) The method of Claim 43, wherein the pinna approximates the shape of a human ear.

45. (New) The method of Claim 44, including an earphone including an in-ear portion, wherein the speaker is configured to generate sound through the in-ear portion.

46. (New) The method of Claim 44, wherein the pinna approximates the shape of an average human ear.

47. (New) The method of Claim 44, wherein the pinna approximates the shape of an ear of a specific individual intended to wear the headgear unit.

48. (New) The method of Claim 47, including an earphone including an in-ear portion, wherein the speaker is configured to generate sound through the in-ear portion.

49. (New) The method of Claim 47, including measuring the ear of the specific individual and producing the pinna as a replica of the ear of the individual.

50. (New) The method of Claim 47, including optically scanning the ear of the specific individual and producing the pinna as a replica of the ear of the individual.

51. (New) The method of Claim 43, wherein the device includes an earphone including an in-ear portion, the method including mounting the in-ear portion in a user's ear and generating sound from the speaker through the in-ear portion.